

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DANIEL E. CARROLL, Jr.

Appeal No. 95-0658
Application No. 08/069,456¹

ON BRIEF

Before DOWNEY, ELLIS and WEIMAR, Administrative Patent Judges.

WEIMAR, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the examiner's decision finally rejecting claims 1-5, 7-11, 13-22, and 24-31, all of the claims pending in the application.

¹ Application for patent filed June 1, 1993. According to appellant this application is a continuation of Application No. 07/750,925 filed July 28, 1991, now abandoned.

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Claim 1 is illustrative of the subject matter and reads
as follows:

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1. A method of preparing and preserving fresh fruit for extended storage comprising the steps of:
separating the fruit into a plurality of individual pieces;
introducing the fruit pieces into an aqueous preservative solution comprising about 8-20% by weight of a non-artificial sweetening agent, about 0.1-0.6% by weight of an edible acid, and about 0.015-0.025% by weight of sulfur dioxide;
placing the fruit pieces in the preservative solution under a vacuum to remove at least a portion of the air from the fruit pieces;
releasing the vacuum and maintaining the fruit pieces in the preservative solution for at least a sufficient time to allow the fruit pieces to absorb at least a portion of the preservative solution therein; and
then placing the fruit pieces directly in a non-freezing refrigerated environment at a pH of about 3.0 to 3.2 for storage.

The references relied upon by the examiner are:

Tierney 1935	2,004,354	June 11,
Glabe 1954	2,678,277	May 11,
Guadagni 1962	3,025,169	Mar. 13,
Silver et al. (Silver) 1988	4,767,630	Aug. 30,

Claims 1-5, 7-11, 13-22, and 24-31, all of the claims pending in the application, stand rejected under 35 U.S.C. §

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103 over a combination of the teachings of Glabe, Tierney, Guadagni and Silver. We reverse this rejection.

BACKGROUND

All of the pending claims are directed to methods of preparing and preserving fresh fruit for extended storage. The goal stated on page 1 of the specification is to preserve fresh fruit for up to 3 months at refrigerator temperatures without the fruit deteriorating with respect to color, flavor or texture. Although individual features of the claimed method have been applied to fresh fruit, such as vacuum treatment in combination with a preservative solution and sulfite treatment, the specific combination of steps is presented as novel and the results are characterized as unexpected. See the paragraph bridging pages 3 and 4 of the specification.

DISCUSSION

Claims 1-5, 7-11, 13-22, and 24-31 stand rejected under 35 U.S.C. § 103 over a combination of the teachings of Glabe and Tierney, alone or in combination with Guadagni and Silver. We refer to pages 3 and 4 of the Examiner's Answer for a presentation of the rejection at issue herein.

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The examiner has an initial burden of establishing that one of ordinary skill in the art would have found the claimed invention to have been obvious at the time that it was made, including all of the recited limitations. The evidence relied upon must support such a conclusion. In this instance we cannot agree with the examiner that the cited art provides the disclosure required to conclude that the claimed methods would have been obvious to one of ordinary skill in the art at the time the invention was made, thus we are constrained to reverse the rejection on this record.

None of the references teach an appropriate range for the storage pH which can be compared to the claimed narrow range. Each of the three independent claims require the following as a last step:

then placing the fruit pieces directly in a non-freezing refrigerated environment at a pH of about 3.0 to 3.2 for storage.

The specification refers to this limitation on page 8, lines 1-8, of the specification, and states:

Applicant believes that there is a synergistic interaction between the malic acid and the sulfur dioxide of the aqueous preservative solution which serves to maintain the pH of the apples during storage in a low range of about 3.0-3.2 to allow

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the very small amount of residual sulfur dioxide (apparently about .006% or 60 ppm) to effectively act to prevent browning and spoilage of the apple slice tissue.

Thus, this limitation is not presented as a selection from amongst known choices of storage pH ranges.

Appellant raises this issue in the sentence bridging pages 7 and 8 and in the first complete paragraph on page 12 of the Appeal Brief. The examiner responds in the paragraph bridging pages 5 and 6 of the Examiner's Answer that:

the applied art in fact discloses the use of acids in processing apples and the selection of the optimum pH for apples viewing the clear teachings of the art disclosing the conventionality of the use of acids would have been no more than the selection of a suitable control well within the determination of one having the ordinary skill in the art.

This statement fails to set forth the desired result that is to be optimized or controlled. Is the examiner suggesting optimization with respect to (1) the degree of tartness imparted to the fruit pieces by the solution, or (2) to the antioxidant, anti-browning effect of the acid in the solution, or to some other effect? The acid component in the preservative applied to the fruit is characterized by Tierney,

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Guadagni and Silver as effecting both the tartness and the color of the treated fruit. However, these references do not recite an appropriate pH for either the preservative solution or the storage environment. Would the optimization of either the taste or antioxidant effect result in a method which included a storage environment pH of 3.0-3.2? The examiner has not provided any reason why this would be the case.

As quoted above, the last phrase of each of the independent claims at issue herein requires the storage environment to be "a non-freezing refrigerated environment" in addition to stating the specific pH for the storage environment.

We have reviewed the art for the features of refrigerated storage and acid use, and found the following:

1) Glabe teaches storage of treated fruit at refrigerator temperatures, but does not add acid to the preservative solution which has been used to treat the fruit;

2) Tierney treats fruit with a solution including acid, but does not include sulfur dioxide in the treatment; does not specify a desirable pH range for the resultant fruit; and, teaches that the treated fruit is to be frozen for storage;

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3) Guadagni treats fruit with an acid containing solution which can include sulfites, but fails to discuss a desirable pH for storage and teaches that the treated fruit is to be frozen for storage; and

4) Silver sprays a solution containing both acid and sulfite onto fruit pieces which are subsequently dried, and discusses the effects of varying the amount of acid used in the treatment solution. Silver mentions the variation in the amount of acid used only with respect to the degree of tartness imparted to the fruit, as opposed to any enhancing effect on the storage conditions.

The only reference (Glabe) that teaches refrigerated storage does not treat the fruit with an acid and suggests the use of substantially greater amounts of sulfur dioxide than those allowed in the methods claimed herein. The broadest range claimed herein is "0.015% - 0.025%" of the preservative solution (claims 1 and 16) which translates to 150 - 250 ppm of the solution. The specification discusses the criticality of this range in the paragraph bridging pages 11 and 12 wherein the use of 300 ppm of sulfur dioxide in the preservative solution results in undesirable noticeable

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bleaching of the fruit. Glabe teaches in column 3, lines 20-23, that:

It has been found that a range of 600 to 700 parts per million of sulfur dioxide on the weight of the juice gives very satisfactory results.

Tierney, Guadagni and Silver teach treating the fruit with an acid-containing solution, but they do not teach storing the treated fruit at refrigerator temperatures. Nor do we find that these references suggest that the fruit could be stored successfully at these temperatures for an extended period without deterioration of the texture, taste and color of the fruit.

We note that Silver teaches in column 4, lines 54-57, that:

the pH should be adjusted since polyphenol oxidase which is associated with browning is pH dependent.

There is no art of record to establish the pH associated with polyphenol oxidase, thus, the teaching of Silver in this regard would not have led one of ordinary skill in the art to

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a refrigerated storage environment and maintaining the fruit at a pH between 3.0-3.2. Moreover, Silver teaches away from contacting the fruit with a liquid for any extended length of time, since such "tends to leach out flavors" (col. 5, lines 16-33, and col. 6, lines 1-11).

Thus, in our view the references, neither alone nor in combination, would have led one of ordinary skill in the art to the claimed storage temperature and pH range subsequent to the claimed preservative treatment.

For the reasons stated above we do not find that the examiner has established a *prima facie* case of obviousness with respect to claims 1-5, 7-11, 13-22 and 24-31 based on the art before us.

CONCLUSION

The decision of the examiner refusing to allow claims 1-5, 7-11, 13-22 and 24-31 under 35 U.S.C. § 103 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

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REVERSED

MARY F. DOWNEY)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
JOAN ELLIS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
ELIZABETH C. WEIMAR)	
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Serial No. 08/069,456

Judge WEIMAR

Judge ELLIS

Judge DOWNEY

DECISION: **REVERSED**

Send Reference(s): Yes No
or Translation(s)

Panel Change: Yes No

3-Person Conf. Yes No

Heard: Yes No

Remanded: Yes No

Index Sheet-2901 Rejection(s):

Acts 2: _____

Palm: _____

Mailed:

Updated Monthly Disk: _____

Updated Monthly Report: _____